Solar Eclipse Newsletter

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The **Solar Eclipse Newsletter** is a monthly newsletter about Solar Eclipses edited by Patrick Poitevin. Financial support from ***Rainbow Symphony.*** The author started the SENL November 1996.

The **Solar Eclipse Newsletter** is only available on NASA's web page of ***Fred Espenak*** and since October 1998. See:

http://www.MrEclipse.com/SENL/SENLinde.htm

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The **Solar Eclipse Mailing List** is maintained by the list owner Patrick Poitevin and with the support of ***Jan Van Gestel***. It excists since December 1997.

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In the body of the message to listserv@Aula.com

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Further information or remarks? Please write to the editor ***Patrick Poitevin.***

18 February 2000

General

From the author

Please find herewith the Solar Eclipse Newsletter for August 2000 which reflects all solar eclipse related topics mentioned and published on the Solar Eclipse Mailing List and others. Please enjoy and … keep those solar eclipse related messages coming!

New Book

From: "Patrick Poitevin" <patrick_poitevin@hotmail.com>@CORUS Sent: vrijdag 30 juni 2000 0:01 To: "SE Mailing List" <SOLARECLIPSES@AULA.COM> Subject: [SE] New eclipse book

Hi, Please note following new eclipse book:

Observations and Predictions of Eclipse Times by Early Astronomers by John M. Steele Dept. of Physics, University of Durham, UK (ARCHIMEDES New Studies in the History and Philosophy of Science and Technology Volume 4) Eclipses have long been seen as important celestial phenomena, whether as omens affecting the future of kingdoms, or as useful astronomical events to help in deriving essential parameters for theories of the motion of the moon and sun. This is the first book to collect together all presently known records of timed eclipse observations and predictions from antiquity to the time of the invention of the telescope. In addition to cataloguing and assessing the accuracy of the various records, which come from regions as diverse as Ancient Mesopotamia, China, and Europe, the sources in which they are found are described in detail. Related questions such as what type of clocks were used to time the observations, how the eclipse predictions were made, and how these prediction schemes were derived from the available observations are also considered. The results of this investigation have important consequences for how we understand the relationship between observation and theory in early science and the role of astronomy in early cultures, and will be of interest to historians of science, astronomers, and ancient and medieval historians.

Contents: Preface. I: Introductory Orientations. 1. Introduction. II: The Western Heritage. 2. Mesopotamia. 3. The Greco-Roman World. 4. The Islamic Near East. 5. Late Medieval and Renaissance Europe. III: The Eastern Heritage. 6. China. 7. Japan. IV: Conclusions. 8. Discussion. V: Appendices. References. Subject Index. Index of Texts. Kluwer Academic Publishers, Dordrecht

Hardbound, ISBN 0-7923-6298-5 June 2000, 336 pp. NLG 270.00 / USD 132.00 / GBP 84.00

Available direct from the publishers at http://www.wkap.nl/book.htm/0-7923-6298-5 and from booksellers.

Most previleged place

From: Olivier Staiger <olivier.staiger@span.ch> To: <SOLARECLIPSES@AULA.COM> Sent: Monday, July 17, 2000 9:52 PM Subject: [SE] most privileged place on Earth ?

I was just thinking: on a 1000-year period , say from the year 1001 AD to 2000 AD , what place on Earth saw the most eclipses ? Is there a city or valley or mountain or

squaremile on this planet that has seen the biggest number of solar and lunar eclipses within a 1000 year span ? Where is this paradise ? And where will it be for the next 1000 years to come ? I know that Lobito Angola is the place with the shortest repetition for 2 total solar eclipses to repeat (2001, 2002) , but where in this world can you see the biggest number of eclipses (solar and lunar) from 2001 to 3000 ? (in other words: where will it become hip for eclipse chasers to get burried after death ... :-) Olivier "Klipsi" Staiger

From: Govert Schilling <goverts@casema.net>

See the article 'Where eclipses come thrice' by Jean Meeus in Sky & Telescope, April 2000, p.63. Apparently, in the timespan 1401-3000 there are 10 regions on Earth that will see three total solar eclipses within 8 years, and two regions that will have four within 20 years. The record that Jean found is a region near 29 E and 23.5 N in southern Egypt, where five total solar eclipses happen in 31.8 years during the 24th century. -- Govert

From: Bob Morris <morris@sce.carleton.ca>

I'm passing this information on to my kids. LRM

From: Sheridan Williams <sheridan@clock-tower.com>

York and Edinburgh get 7 total solar eclipses from 2001 to 3000. As Jean Meeus worked out, there is a spot in southern Egypt that gets 5 in about 20 years (I think).

The Outer Hebrides off the west coast of Scotland get 2 TSEs in 22 Jan 2289 and 8 Jun 2290 (a shorter span than Lobito in 2001/2002).

Britain (including the Channel Islands get TSEs in 2133, 2135, 2142, 2151, 2160, 2189 and 2200, not bad 7 in only 67 years. Sheridan Williams

From: Pierre Arpin

That's nice for TSE but what would be the best spot if you include annular too ?

I know that a spot in Lybia will get an annular in 2005 and a total in 2006.

From: barr derryl

The intersection of Saros' 134 & 139 that delivers the double annular-total punch in Lybia replicates itself on 14 Oct 2023 and 8 Apr 2024 over a patch of the world that most of us (even Nebraska football fans) might consider less hostile: San Antonio, Texas, a truly beautiful American city steeped long and proud in an Hispanic past and traditions.

From: Crocker, Tony (FSA) <Tony.Crocker@transamerica.com >

Some experimentation with Emapwin reveals as yet no obvious bias to a particular location. The greater width of totality paths in the polar regions offsets the greater length in the tropics. A very cursory trial and error search has yet to find a spot exceeding 9 TSE's between 1000 and 3000 (excluding the ones Emapwin shows with negative altitude). The spot in Egypt with 5 TSE's in 31 years only has 3 others between 1000 and 3000.

From: Dave Balch <daveb@afew.com>

This discussion is fascinating... finding the place with the largest NUMBER of eclipses is one thing, what place on earth will experience the most minutes of totality over time? And, in which spot would you rather be buried... the most eclipses or the most minutes of totality?

I think I'll go for the most minutes of totality! Dave

From: Crocker, Tony (FSA) <Tony.Crocker@transamerica.com >

Since the NUMBER of eclipses does not have an obvious bias by latitude, time in totality must be highest in the general area between the Equator and Tropic of Cancer.

From: Assoc Prof J R Huddle <huddle@nadn.navy.mil>

To me, personally, the most fascinating thing is not how long an eclipse lasts, but that it happens at all. Longer is better, to be sure, but to me that's not the most important thing. I also like traveling, and eclipses are my main excuse for traveling. So my vote is for more eclipses.

But if an eclipse occurs where you live, you don't get to go on a trip. And if you're dead and buried, you don't get to travel much - or see eclipses. Jim Huddle

From: <Kidinvs@aol.com>

Professor... I'm with you. The whole concept of traveling to see eclipses, and putting tour groups together, as enabled me to travel to places that most people only dream of (Brazil, Thailand, Caribbean, Turkey, Africa, Mexico). I also get great joy to see the look on peoples faces when their eyes witness their very first eclipse. I also know that I live in those peoples mind through out all of their lives, as they relive their trip to some far away place that they would have never seen had it not been for me. I do not say this to boast. I say it because I believe that to see an eclipse is like receiving a gift from someone very, very high up the ladder... and I feel great when I am able to pass that gift to others. As all of you that have seen an eclipse will agree with (I am sure).... after you see one, you will be forever, just a little bit different. You will look in the sky forever with a slightly greater appreciation of what you see. And you will live waiting to see the next one. I am pleased that I have turned people into "Eclipse Junkies" Eric Brown

From: Bob Morris <morris@sce.carleton.ca>

I and others on this list have written articles that attempt to convince readers that a total eclipse is one of the greatest experiences of a lifetime and is worth travelling to

see: plus you get a great travel experience (as you say).

If we were sucessful, the entire population of the western world would have travelled to Aruba in 98.

What more could you ask for? A long eclipse with high probability of good weather in a lovely sunny and warm place in February!

Yet in my hotel, the Tamarinj, I'd guess that only 30% of the people had travelled to Aruba specifically to see the eclipse. The rest were there by accident.

In Canada, it was also university break week to boot!

The fact that everyone in the Great White North who had ever read a National Geographic or otherwise read about eclipses did not travel to Aruba, thereby sinking the island into the ocean, leads me to believe that you cannot convince 95% of people who have never seen an eclipse to make the treck to see an eclipse!

It is a "chicken and egg" situation: once you've seen one, you want to see more. But until you've seen one, it is difficult to convince you to see one. Bob Morris

From: <Kidinvs@aol.com>

...I have found that if you speak to people with the means to get away, and the time to do it, if you explain the eclipse with passion and fervor, people are willing to try...especially if there is an agenda other than the eclipse (a winter vacation, a safari ect) that is included.

From: Brian Garrett <mgy1912@home.com>

Maybe they were afraid that the mass of all those people congregating in one spot would alter the earth's rotational speed, thereby affecting delta-T and screwing up predictions for decades to come... :-) Brian

From: Pierre Arpin <parpin@hotmail.com>

Hello members of the list As a "vetern" of 10 total and 2 annular I could make the following joke when a non amateur astronomer tells me that I would be sastisfied after viewing a total solar eclipse.

I answer him by the following question ;

"Do you stop looking to beautiful women when you have seen one ?"

Traveling to observe TSE gives me the chance to be in corners of the Earth where I would normally not go. It's also a rewarding experience to share my enthousiasm with native people not accustomized with tourists. That was the case in Colombia in 77 in a remote village lost at the Andes foothills and in Bolivia in 94 in the Antiplano.

As a Canadian the next eclipse in 2001 will be rather expensive to observe. I will do my best to be there. Pierre "IQ89" Arpin

From: Olivier Staiger <olivier.staiger@span.ch>

thanks a lot for all the notes , seems southern Egypt is a nice place to retire :-) But, what about ALL eclipses ? What place sees most eclipses if you include partial, and also lunar eclipses ? when we find out, will this be our "Meccah" ?

From: Madden <iluvelx@netacc.net>

Bob's comments echo my own experience. I can't begin to count the number of people who I talk to about my eclipse experieces who are quite happy for me but would not travel 100 miles to see one.

In Venezuela we met a number of Americans and other's in the hotel who asked, "Eclipse? What eclipse?" Several were scientists (ornithologists). I don't believe they actually traveled the 50km on eclipse day required to observe totality. They commented later on the noticable darkening of the sky in the afternoon in Coro.

This past Tuesday I was waiting for a business meeting to start. The convenor decided to kill some time by going around the table asking everyone what their hobbies were. I mentioned chasing eclipses and my plans to go to Zambia next June. You should have seen the looks. The thrust of comments was, "You would go half way around the world to watch the sun go dark for three minutes?".

Look at it another way. My wife was very cool on going to Venezuela in 1998. In fact, she only agreed if I arranged five days for her on Bonaire. She was very unhappy traveling inside Venezuela and with the accomodations. But AFTER she experienced the eclipse it was a completely different story. Very supportive of Turkey despite possible dangers and now enthusiastically looking forward to Africa. She is now, what she herself refers to, a shadow chaser.

I guess you gotta see it to believe it. madden/rochester

From: John Tilley <john@tilley.demon.co.uk>

Tony - I totally <sic> disagree with you - the number of solar eclipses does have a very strong correlation to latitude.

You need a copy of "Mathematical Astronomy Morsels" by Jean Meeus - in the article "Frequency for a given place" - pages 88 to 92 - back in 1982 Jean Meeus examined every solar eclipse from AD 1700 to AD 2299 at 408 "standard" points on the earth's surface - he found that the best latitude band on the planet for total solar eclipses is 70 degrees north - the worse at 70 degrees south. His graph on page 91 shows that there were 2.4 times as many total solar eclipses in the northern band as in the southern..... (yes that was two point four times).

Please don't let the word "Mathematical" put you off buying this excellent book - Solar Eclipses covers pages 43 to 99 and Lunar Eclipses pages 100 to 112 and a further 49 pages on lunar occultations.

One of my favourite items from this book is the fact that for the North

American partial eclipse of Dec 25th 2000 - there are three little areas close to the line of "maximum eclipse on the horizon" where the sun will rise in eclipse, stay in eclipse and then set in eclipse - in other words the partial eclipse will last "the whole day"! (the day is of course very short)

The main area is just north of Hudson Bay over "Foxe Channel" - west of Baffin Island. The book is published by Willmann-Bell. Happy reading! - John

From: Crocker, Tony (FSA) <Tony.Crocker@transamerica.com >

600 years may be too short a period of time to draw such a conclusion. For example, the following table of central points of 21st century eclipses obviously lacks statistical significance.

Actual Eclipses, 21st Century By Latitude Annular Hybrid Total
60+ N 8 0 10
30-60 N 5 0 2
0-30 N 27 1 20
0-30 S 18 5 14
30-60 S 6 1 15
60+ S 8 0 6

Total N 40 1 32
Total S 32 6 35
72 7 67

In browsing Emapwin, my guess was that high northern latitudes would be best. Tromso, Norway at 69.65N 19.09E had 9 TSE's from 1000 to 3000. Derived from central points on Espenak's list from 0-3000:

Expected Eclipses, One Century By Latitude Annular Hybrid Total
60+ N 6.1 0.2 5.3
30-60 N 13.8 1.6 12.4
0-30 N 18.6 2.7 16.5
0-30 S 19.4 3.2 15.1
30-60 S 14.7 1.3 11.1
60+ S 7.6 0.6 3.8

Total N 38.5 4.5 34.2
Total S 41.8 5.1 30.1
80.3 9.6 64.2

The greater width of totality in the polar regions increases frequency, but how much? Testing Tromso's latitude at 15 degree longitude intervals from 1000 to 3000: at 30E, 12 TSEs; at 105E and 45W, 11 TSE's. On the other hand, at 120E, only 3 TSE's, and a couple of other spots only 5.

So I stand partially corrected. The most frequent spots may be in the north polar regions. However, the bias appears to be slight (average 7 or 8 instead of 5.5 for the world overall), and the standard deviation very large.

From: Crocker, Tony (FSA) <Tony.Crocker@transamerica.com >

Why didn't more people go to Aruba? The simple reason is that most of us didn't know about it. There is almost no advance media publicity in the U.S for any eclipse outside the U.S. I would suspect the Internet will increase the number of people who know in advance. Hopefully not enough to put a price / availability squeeze on the more exotic locales (like 2001).

I don't regret not knowing about 1998. El Nino made that week the best of the decade for powder skiing in Southern California.

From: Evan Zucker

But the people who didn't know about it are the people who wouldn't have gone even if they had known. Obviously, there are always a few exceptions (like you, perhaps), but I wouldn't imagine too many. For what it's worth, even mass market publications, such as the New York Times travel section, invariably have advance articles about overseas eclipses. They certainly did for both 1998 and 1999. But, obviously, total eclipses are not major news items until the day of the eclipse, if then. Evan H. Zucker

From: Crocker, Tony (FSA) <Tony.Crocker@transamerica.com >

1998 and 1999 were both in prime tourist season in destinations popular with Americans. I bet there will be very little mass market info leading up to 2001. Historically, the NY Times pays more attention to eclipses than other papers.

From: Crocker, Tony (FSA) <Tony.Crocker@transamerica.com >

A few more samples from Emapwin from 1000 to 3000: 70N 31E has 14 TSEs with 23:48 combined totality.

But, 15N 134W has 12 TSE's with 33:31 combined totality. Move to 15N 135W and you get only 10 TSEs but 33:55 combined totality.

I still believe that while max number will be in the north polar regions, max time in totality will be in the north tropics.

The high volatility of results, even moving a very short distance, makes me suspect that there are better places not yet found by trial and error. I leave it to the more talented programmers on the list to find them more efficiently.

From: Marc Weihrauch <marc.weihrauch@student.uni-halle.de>

Hello Evan, and everybody else, Well, the "European" eclipse of 1999 was a major news item over here. Many weeks before the event there were lots of articles and reports about the coming eclipse - often by people who had no idea what they were talking about. "When the three planets (sun, earth and moon) form an exact line..."

Shortly before the day E came, the shops ran out of solar filter glasses; at some places people were trying to get such a pair of glasses so very desperatly that the police had to protect the shops from the masses.

But you're right, anyway: All of that was probably because the shadowpath was right in front of our doors. Hadn't it run across so many Western- and Middle European countries we hardly had noticed.

That's the way it is: You just cannot understand this fascination until

you've been in the lunar umbra yourself, so you wouldn't travel to see an eclipse before you've seen one. Therefore the media hardly care. Best regards Marc

From: John Tilley <john@tilley.demon.co.uk>

Tony - This is a very interesting area. However Meeus is quite adamant as to why he chose the period of 600 years - on page 59 of Mathematical Astronomical Morsels - there is a graph showing the number of solar eclipses for each period of 100 years from -600 to 3400 - ie it covers 4000 years in total.

The are three lines showing the number of:
- all solar eclipses
- central eclipses
- annular-total eclipses
for each 100 year period. There are periods "rich" in eclipses and periods "poor" in eclipses. (I hate to have to say this but we are living in a really poor period!)

There are two cycles at work - one is just under 600 years for central eclipses - which is why Meeus chose 600 years.

The second is about 1700 years for annular-total eclipses. Meeus says "we know of no explanation for that curious fact and we did not investigate the subject further"

As the number of A-T eclipses is just under 5% of all solar eclipses - this second unexplained cycle has a fairly small impact - but its fascinating to wonder what it is.....

There is some interesting programming to be done to answer your question:

- Which place on Earth spends most time in the umbral shadow? (over say the 5000 year period in Espenak's list)

Hopefully Jean Meeus will investigate what the 1700 year cycle is. Best Wishes - John

Lunar eclipse

From: Michael Gill <eclipsechaser@yahoo.com> To: <SOLARECLIPSES@AULA.COM> Sent: Monday, July 17, 2000 5:28 AM Subject: Re: [SE] LUNAR ECLIPSE

There IS a relationship between the July 16th lunar eclipse, with the total solar eclipses of 1991 and 2009.

Jean Meeus discusses it thoroughly in his book "Mathematical Astronomy Morsels", available from Willmann-Bell (http://willbell.com/) Clear skies, Michael Gill.

From: barr derryl <dbarr@nque.com>

Thank you Michael Gill for the information regarding the half saros cycle, and the lead to Jean Meeus' Mathematical Astronomy Morsels. Since your message I have noted at least one additional reference to this book on the List. Using the address that you supplied, I found and read a review, and ordered immediately. The book arrived yesterday, and while I have had only a brief bit of time to look it over (I hope to remedy that during a brief eclipse vacation to Montana beginning tomorrow) it appears to be a treasure house of information for anyone interested in the broad spectrum of astronomical phenomenon as well as solar eclipses in particular. Hoping to be correct in my usage, just let me say "it's" fantastic, and "its" table of contents is intriguing. Thank you again, Michael. Derryl Barr

LIVE Lunar Eclipse

From: Lisa Bearsley <lisa_bearsley@hotmail.com> To: <eclipse@hydra.carleton.ca> Sent: Monday, July 10, 2000 10:07 PM Subject: [eclipse] july 16 eclipse

If anyone is interested in being in New Zealand for this Total Lunar eclipse on july 16 - I'm willing to offer space and transport to a spot out of central Auckland for better viewing.

Contact me at my email address lisa_bearsley@hotmail.com

For all those on the list that will be viewing the eclipse, I wish you clear skies. Lisa

From: <bdenton2@csc.com>

I will be hoping to see the total lunar eclipse on 16 July but the extended weather forecasts here in Melbourne, Australia are not looking very good for clear skies. I may have to travel interstate to find better weather. Regards, Bob Denton

From: Eiichi Wada <ewada@nikkeibp.co.jp> To: <SOLARECLIPSES@AULA.COM Sent: Tuesday, July 11, 2000 10:53 AM Subject: [SE] LIVE! ECLIPSE 2000 Lunar

Dear Olivier and eclipse friends, Yes, we will do it!

Following is the press release of LIVE! ECLIPSE 2000 Lunar. Our English pages are still under construction. So please wait for a few days. Please visit and enjoy ! Eiichi Wada, Chiba, Japan

From: Olivier Staiger <olivier.staiger@span.ch>

Great ! will you have some stars occulted during totality ? and see S4 Linear comet ? I forward your info to www.universetoday.com who will do a great media coverage with lots of links. contact Fraser Cain at info@universetoday.com

I saw S4 LINEAR last weekend with 25x150 Fujinon binoculars, see http://eclipse.span.ch/s4linear.htm and
http://eclipse.span.ch/080700.htm

have a good day and great eclipse. Greetings to all the team. Olivier

16 July lunar eclipse

From: Lisa Bearsley <lisa_bearsley@hotmail.com> To: <eclipse@hydra.carleton.ca> Sent: Monday, July 10, 2000 10:07 PM Subject: [eclipse] july 16 eclipse

If anyone is interested in being in New Zealand for this Total Lunar eclipse on july 16 - I'm willing to offer space and transport to a spot

out of central Auckland for better viewing.

Contact me at my email address lisa_bearsley@hotmail.com

For all those on the list that will be viewing the eclipse, I wish you clear skies. Lisa

From: <bdenton2@csc.com>

I will be hoping to see the total lunar eclipse on 16 July but the extended weather forecasts here in Melbourne, Australia are not looking very good for clear skies. I may have to travel interstate to find better weather. Regards, Bob Denton

Hooked on the shadow

From: Thibault Mangold To: SOLARECLIPSES@AULA.COM Sent: Tuesday, September 12, 2000 8:19 AM Subject: [SE] Hooked on the Shadow / 2001 sites

Dear chasers, I recently received the video by David Makepeace, "Hooked on the Shadow" and actually enjoyed it ! It shows very well the eclipse chaser's mood, made of excitation and emotion is very well. And it was nice to see some of this list's contributors. Nice job, David !

I'm currently dealing with a Tour Operator (Safari Austral - Southern Safari, did anybody know them ?) which propose to watch the eclipse in the Muvaradona park, near the Zambezi escarpment (31° E, 16° 23' S, 3m 16.2s according to www.bdl.fr). They also propose a place in Mana Pools As I'm not an experienced chaser (only one clouded out eclipse in 1999), I would like to know if you heard about these locations. Will anybody go there, or do you all prefer Zambia ?

And I finish with a contirbution to the "You are an eclipse chaser if..." contest: You are an eclipse chaser if you use Netscape browser (at least 4.72 version) ;)) Did you notice the small solar eclipse behind the big N ? Clear skies, Thibault.

Happy Anniversary

From: <Kidinvs@aol.com> To: <SOLARECLIPSES@aula.com> Sent: Tuesday, July 11, 2000 7:07 PM Subject: [SE] Happy Anniversary

...yes... the Big One was 9 years ago to the minute... Happy Anniversary to those who saw it. Eric Brown

From: Bryan Brewer <bryanb@earthview.com>

And for anyone feeling especially nostalgic about the "Big One", check out the Maximum Eclipse lithograph at http://www.earthview.com/book/maximum.htm There are still copies available for purchase. -- Bryan Brewer

From: Peter Tiedt <Peter.Tiedt@npc-eagle.co.za>

hmmmmm - that's about half a saros.... so it's 9 years and 10 days for the next ..... anyone for China in 2009?

From the SEML Owner

From: Patrick Poitevin <patrick_poitevin@hotmail.com> To: SE Mailing List <SOLARECLIPSES@AULA.COM> Sent: Saturday, August 26, 2000 8:44 AM Subject: [SE] From your SEML owner

Dear all, The error message has been found. The origin of the auto reply of a certain company is found. Please note, when you subscribe via your work, observatory or institute, and you do not have any control on your e-mail address or whatever, when you are absent, better unsubscribe and subscribe again when you are back.

The error we had is that a SEML subscriber was absent for a while. The company, where the subscriber was using the e-mail address, decided to change the address. Meaning that every subscriber who did send a message got an automatic reply from that company.

Again, please control your e-mail addresses carefully. Many subscribers do change addresses and think they still can send messages to the list. Only subscribed e-mail addresses can send messages to the SEML. Even small changes in your e-mail address wouldn't be recognised. We avoid Spam in that sense and the list is personally controlled by me.

Thank you for your understanding. Please do send reactions to me and not to the list. Best regards, Patrick

Four interesting articles

From: Assoc Prof J R Huddle <huddle@nadn.navy.mil> To: <SOLARECLIPSES@AULA.COM> Sent: Tuesday, July 25, 2000 6:26 PM Subject: [SE] 4 articles of interest

The September, 2000 issue of Sky & Telescope has four articles that may be of interest to eclipse chasers:

"A Tale of Two Filters," by Peter Bealo, page 59. About two new hydrogen alpha filters.

"A New Standard in Solar Filters," by Alan MacRobert, page 63. About the Baader AstroSolar Safety Film, including where you can buy it.

"For a More Precise Position," by Stuart J. Goldman, page 68. About GPS now that SA has been turned off. I remain convinced that you have to evaluate the performance of your own GPS receiver under field conditions. Even two receivers of the same make and model can give slightly different results.

"African Adventure: The New Millenium's First Total Eclipse," by Fred Espenak and Jay Anderson. Not much info here that is new for most of us on the list, but some nice photos by Fred. Best Regards, Jim Huddle

Eclipse infor site

From: Sheridan Williams <sheridan@clock-tower.com> To:

<SOLARECLIPSES@AULA.COM> Sent: Saturday, July 22, 2000 4:43 PM Subject: [SE] New Total Solar Eclipse info site

I got so fed up with trying to maintain a list of Total Solar Eclipse related web sites that I decided to compile my own.

It can be found at: www.clock-tower.com/wwwsites

If I am re-inventing the wheel and there is a site in existence already, I'll bow out.

If this is the first such site I'm happy to keep it up to date if people email me amendments and new entries to: www-info@clock-tower.com Sheridan Williams

From: Sheridan Williams <sheridan@clock-tower.com>

Apologies to those who couldn't get to the site. Try: www.clock-tower.com/wwwsites/ I use Netscape which puts the final / in automatically. Sheridan Williams

Eclipse calculation

From: Jeff Batten <jeff.batten@csun.edu> To: <SOLARECLIPSES@AULA.COM> Sent: Thursday, July 27, 2000 9:24 PM Subject: Re: [SE] Eclipse calculation

>Dear shadow-chasers, perhaps you remember that I asked you for a good source of information on eclipse calculation. One of the recommendations you gave me was Jean Meeus' "Elements of Solar Eclipse". I bought this book and started to implement its formulae. Now I have a problem with the calculation of the inner contacts (if there are any): Sometimes I get the correct values for the second and third contact, but in the wrong order. Sometimes my software claims that the third contact happens before the second! (This is both weird and embarrassing.) I can't find the mistake in my source code, I can't find a passage where it differs from the formulae in the book. (Especially I checked that all the signs are correct.) Does this sound familiar to anyone on the list? Do you have an idea where I could be wrong? Thanks a lot for your help! Marc

Marc, I would be interested in the above book (Elements of Solar Eclipse). Do you know where I can purchase it. Thanks Jeff

From: Joel M. Moskowitz, M.D. <moskowi@attglobal.net>

"Elements of Solar Eclipses" by Jean Meeus is published by Willmann-Bell and can be gotten (good English, huh!) from them, or from amazon.com, where I got mine.

From: Evan Zucker

http://www.amazon.com/exec/obidos/ASIN/0943396212/qid=964745161/sr=1-7/002-5959415-9030446 -- EVAN

From: Felix Verbelen <gd32020@glo.be>

Hello. Of cause, the bug can be anywhere in the program. However, when I first did a solar eclipse program in BASIC on a TRS80-Model 1(must have been 1980/81 ..) I also obtained some odd results from time to time, although all formulae seemed to be correct. In the end, I found that the bug resulted from some faulty calculation of arctangens. To find the right quadrant of arctg(sine/cosine) DON'T just divide sin by cos and calculate arctg: first find the correct quadrant on the basis of the signs of both sin and cos, and only then divide and find the value of arctg.

Probably this is not the bug in your program, but it was the one that caused me an headache 20 years ago. Regards. Felix Verbelen

From: Worachate Boonplod <worachateb@hotmail.com>

Hi, In my opinion, it might be better for us if you could tell more about what cases you have these problems. I ever found that my calculation swap like you explained when I tried to calculate an annular eclipse. Worachate Boonplod

From: John Tilley <john@tilley.demon.co.uk>

Marc - Yes it sounds familiar - I'm afraid to say that you aren't checking your signs carefully enough....

On page 26 you have to calculate tau and the approximate times forsecond and third contacts which are tm - tau and tm plus tau.

If you think about it the formula for tau might give either a positive or a negative number - so for second contact tm - tau is fine if tau is positive - but if tau is negative - then the times will be swopped over....

You need to use abs(tau) - ie absolute value.

If you read Jean Meeus "Astronomical Algorithms" - he lists some of the mistakes you might make in astronomical programming. Some of the ones that I have tripped over are:

1 - When entering latitude or longitude make sure that if for example its -11deg 3min 23 sec - then you calculate -11deg -3min and -23sec - in other words you need three minuses - else the place you are calculating local circumstances for will be somewhere else.

2 - You need to use the function atan2 - to make sure you get angles in the right quadrant. (Page 15 - extreme points of centre line)

3 - Remember that right ascension goes from 0 to 24 hours - so you need to convert to degrees - so if you are out by a factor of 15 - thats usually it.

4 - When iterating (page 25) and the value of say tm has to be very small - less than 0.00001 - make sure that you use absolute again - eg repeat ....calculations until abs(tm) < 0.00001

(if you don't use absolute you will drop out of the repeat construct with a large negative value of tm ....)

5 - When calculating times - make sure you handle times less than 0 and greater than 24 correctly.

6 - You can get very large angles - depending on the compiler and language you might have to reduce these to the range 0 to 360.

7 - Be careful to use radians and not degrees in programming trigonometric functions.

8 - Remember that the Besselian Element M - is in degrees.

My rule of thumb - if you get a funny result in your program - then Meuus is always right and you are wrong! Good Luck - John Tilley

From: Carton, WHC <Wil.Carton@corusgroup.com>

Marc, I think that this effect is caused by the sign of L2, the radius of the umbra/antumbra in the plane through the observer perpendicular to the shadow axis: negative for total eclipse, positive for annular eclipse. Based on my thorough experience with eclipse calculations, I suggest you to look carefully for the remarks about the sign of cosine(psi), that must be given somewhere in Meeus' text. This affects the term L2*cos(psi)/n in the formula of the eclipse contacttimes, which term (in absolute value) is the half of the duration of umbral/antumbral eclipse (the other term is the time-correction from the adopted time to the moment of mid-eclipse). Wil Carton, HOLLAND

From: John Tilley <john@tilley.demon.co.uk>

Wil - Thanks for clarifying this point - the Explanatory Supplement says that the height above or below the fundamental plane can be positive or negative - I hadn't realised that the radius of L2 is also positive or negative. Interestingly for a partial eclipse L2 can be both positive or negative - so you really have to watch your signs! Best Wishes - John

Camcorder for eclipses

From: Eric Pauer <pauer@sanders.com> To: Solar Eclipse Mailing List <solareclipses@aula.com> Sent: Thursday, July 06, 2000 5:03 PM Subject: [SE] Camcorder for Eclipses?

My old 8mm camcorder is almost ready to be retired. I'm interested in recommendations for digital camcorder models that can do a good job capturing solar eclipses. I'd also like it to do well with normal video situations like of scenery, kids, indoors/outdoors, etc. Here's the specifications I'm considering:

Optical Zoom: higher is better (at least 20X?)
Format: Hi-8, Digital-8, mini-DV
Image Stabilization: preferred
Size: smaller is better
Manual controls: for focus, also possibly exposure
Price: maximum of $1000 USD
Lux rating?

It seems like some of the newer Sony models do not have manual controls (TRV520, TRV720). I need to get a camcorder in the next month or so for "normal" non-eclipse use, but I would like it ultimately be able to be used for solar eclipses and lunar eclipses.

Suggestions on models, specifications, etc. would be greatly appreciated. Thanks. Eric Pauer

From: Assoc Prof J R Huddle <huddle@nadn.navy.mil>

It is also very desirable to be able to attach a 2X teleconverter to the lens to double the magnification. Check to see that you can screw filters, etc. into the lens. Jim Huddle

Astrocon 2000

From: Dave Balch To: Solar Eclipse Listserve Sent: Thursday, July 20, 2000 4:19 PM Subject: [SE] Astroncon 2000

Are any of you list members going to Astrocon 2000 in Ventura California? If so, you're invited to come to my session Friday, July 21 at 4:00 pm. It is called "WOW! The Most Incredible Thing You'll Ever See. What It's Like and What It Takes to Experience a Total Eclipse of the Sun". As a professional speaker, I offer programs on small business, productivity, decision-making, and thinking techniques. But my true passion is solar eclipses which is, of course, my favorite program to deliver! (I am also working on another program tentatively titled "Goal Setting in the Shadow of the Moon" and uses the eclipse metaphor in demonstrating the power and importance of setting good, clear goals.) I will have video from Romania and a multimedia presentation from 1980 in Africa that includes slides and audio from the observation site, mixed in with music from 2001: A Space Odyssey. I had an opportunity to present it in San Diego at the Rueben H. Fleet Science Center and when the music climaxed I think that some of the audience did too... they were actually cheering out loud. I've probably seen it more than 100 times and it still gives me shivers. I hope I can share it with some of you, and would love to meet you. Friday, July 21 at 4:00pm in Ventura, California. Dave Balch

2017 and 2014 coordinates

From: <JohnLX200@aol.com> To: <SOLARECLIPSES@aula.com> Sent: Wednesday, July 05, 2000 11:43 AM Subject: [SE] 2017/2024 intersection coordinates

Hi everyone, I hate to ask a question which I should already know the answer to, but I will because here's my situation:

1. I'm leaving for St. Louis today on a business trip, and may have some spare time there this week.

2. I saw an earlier post that the intersection is near St. Louis.

3. I'll bring a GPS with me.

4. I'd love to know the intersection point of the centerlines, and preferably also the four corners of the intersecting area. For extra credit, an estimate of the possible magnitude of deviation due to delta T will let me know how far

East/West the center point might vary.

If anyone can crank the numbers for me and email them to me privately (in addition to the list if you wish) at SR-71@rcn.com I'd greatly appreciate it. Please note that is my mobile email address, which isn't subscribed to the list. Thanks, John Hopper

From: Sheridan Williams <sheridan@clock-tower.com>

Intersection of centre lines for 2017 and 2024 is according to my calculaions: 37.62deg 89.08 deg, assuming Delta Ts of 1.78min and 2.03 mins.

With Delta Ts of 1.38 and 1.50 (much more likely) coords are: 37.61deg 89.20deg.

I have attached a map of the area (with tracks on) to your personal mailbox. If others would like to see the map let me know. Sheridan Williams

1748 Antique map

From: John Fazli <jfazli@ix.netcom.com> To: <solareclipses@Aula.com> Sent: Wednesday, July 26, 2000 2:03 AM Subject: [SE] 1748 Antique Map of Great Solar Eclipse of July 14 MDCCXLVIII.

Thought subscribers to this list might be interested in this unusual rare map:

The Geography of the Great Solar Eclipse of July 14, MDCCXLVIII. Exhibiting an accurate map of all parts of the Earth in which it will be visible. With the North Pole according to the Latest Discoveries, by G. Smith Esq.

London: E.Cave, 1748. 30 x 43 cm. Copperplate engraving. Multiple folds, small tear right margin.

For sale on eBay: http://cgi.ebay.com/aw-cgi/eBayISAPI.dll?ViewItem&item=390139668

From: J.P. van de Giessen <jpvdgiessen@gelrevision.nl>

This is indeed a very rare exhibit. On that day there was no Solar Eclipse!! The only solar eclipses I found are:
1748 Jan 30 03:29 T 117 -0.650 1.032 54.4S 154.9E 49 140 02m12s
1748 Jul 25 11:27 A 122 0.518 0.946 48.7N 24.6E 59 231 05m12s
1749 Jan 18 19:09 T 127 0.026 1.046 19.1S 104.8W 89 155 04m07s
1749 Jul 14 12:19 A 132 -0.247 0.962 7.8N 7.1W 76 141 04m46s
1750 Jan 08 09:28 H 137 0.721 1.004 23.0N 29.3E 44 20 00m24s
1750 Jul 03 18:39 A- 142 -0.998 0.996 64.8S 124.3W 0
(Data copied from http://sunearth.gsfc.nasa.gov/eclipse/SEcat/SE1701-1800.html)

This map was printed in December 1748 in the "Gentlemans Magazine", so I think the date is a misprint and the real date is 14 july 1749. Jan Pieter van de Giessen

From: Felix Verbelen <gd32020@glo.be>

Hello. Gregorian calendar was adopted in Great Britain in september 1752. So, in 1748 Julian calendar was still being used in G.B.. This means that there is no misprint, but that the date is according to the Julian Calendar. Reagrds. Felix Verbelen.

From: Michael Gill <eclipsechaser@yahoo.com>

There was an eclipse on that date. The discrepancy here is due to the fact that the date quoted is an Old Style Julian Date. July 14th 1748 Julian Date converts to July 25th in the Gregorian calendar.

Although the Gregorian calendar was instituted in 1582, Britain and it's colonies did not adopt it until 1752 (after the 1748 eclipse, the track of which passed over Scotland).

The eclipse of July 14th 1749 (Gregorian) passed over South America and Africa. Michael Gill.

From: jpvdgiessen <jpvdgiessen@gelrevision.nl>

You all are right, I forgot England introduced the Gregorian Calendar some years later. Jan Pieter

From: Francis Graham <francisgraham@rocketmail.com>

I think the difference is between Gregorian and Julian calendars [insert appropriate emoticon]. Francis Graham

From: Sheridan Williams <sheridan@clock-tower.com>

This eclipse is detailed in my book "UK Solar Eclipses from Year 1" and the date IS correct.

> As Michael Gill says: ... the Gregorian calendar was instituted in 1582, Britain and it's (sic) colonies did not adopt it until 1752 (after the 1748 eclipse, the track of which passed over Scotland).

Why can't people realised that "it's" is short for "it is" or "it has" and there are NO exceptions. Sheridan Williams

01 July 2000 Partial Eclipse

Any pictures?

From: Andre Vogt <AndreVogt@web.de> To: <solareclipses@aula.com> Sent: Sunday, July 02, 2000 5:54 PM Subject: [SE] Partial Eclipse of July 1

Hello eclipse-friends, Has anybody photographed the partial solar eclipse that occured on saturday in the southern part of America ? It would be a pity, if nobody had seen this eclipse. Best regards. Andre

From: Olivier Staiger <olivier.staiger@span.ch>

sorry, my friends, we had no luck with partial solar eclipse yesterday in Punta Arenas, it was very much rainy and overcast. But at least we

now have a local contact there, for upcoming events, he is ready to try again. Klipsi

31 July 2000 Partial Eclipse

Live Cam of eclipse

From: Dale Ireland <direland@drdale.com> To: Solar Eclipse List <SOLARECLIPSES@AULA.COM> Cc: Eclipse List <eclipse@hydra.carleton.ca> Sent: Sunday, July 30, 2000 3:20 PM Subject: [eclipse] Live webcast of today's eclipse

I will have a live webcast of the partial solar eclipse today on my live cam page a filtered 1500mm view http://www.drdale.com/cam

It begins Sunday 30 July 7:30pm Pacific daylight Time (Seattle) (which is 0230 GMT 31 July) maximum eclipse is at 8:10pm PDT and the Sun will set partially eclipsed behind the Olympic Mountain range which could be interesting

the weather is currently hot and clear with a possibility of cloud (of course) this evening.

Hit the reload button often, I hope to update the image every 30 sec.

if you have a slow connection and don't want to keep reloading the entire Live Cam page the address of the image alone is http://www.drdale.com/cam/live.jpg

you can check this during the day today to see how the weather is progressing Dale

From: Olivier Staiger <olivier.staiger@span.ch>

hellllllooooo from Pond Inlet, Baffin Island !!!! had great sunny day yesterday, but currently (local noon) overcast :-(will webcast eclipse - or clouds :-(live at http://eclipse.span.ch/liveshow.htm eclipse starts 8:33 PM CDT , = 9:33 PM EDT, 6:33 PM PDT = 01:33 GMT July 31 maximum eclipse reached at 9:18 PM CDT = 02:18 GMT more info at http://eclipse.span.ch/300700.htm hoping for clearing skies Klipsi

From: <JohnLX200@aol.com>

I just visited Dale's site, and his webcam shows the sun approaching maximum eclipse. So here's a reminder of the URL to go see it live NOW!! John

From: Dale Ireland <direland@drdale.com>

I have posted some video images of the eclipse on my webcam page http://www.drdale.com/cam tomorrow when I developed my film I will have some more images on the eclipse page Dale

Eclipse through periscope

From: Olivier Staiger <olivier.staiger@span.ch> To: <SOLARECLIPSES@AULA.COM Sent: Tuesday, July 18, 2000 5:30 AM Subject: [SE] solar eclipse through periscope

Hi, the partial solar eclipse july 30-31 is visible in the High Arctic. I leave next sunday to Canada and report live from http://eclipse.span.ch/31july2000.htm . I am looking for more observers in Alaska, Greenland, Norway, Spitzbergen, Sibiria, on icebraker cruiseships, etc. Anybody at the North Pole ? Does anybody on the list here have very special contacts with U.S. , Russian , French or other Navy ? Would be cool to ask their submarines, if in the area, to take a photo of the eclipse through the periscope ! That would be a very rare photo :-) Olivier "Klipsi" Staiger

Eclipse from Seattle

From: Jay Pasachoff <jmp@williams.edu> To: <SOLARECLIPSES@AULA.COM> Cc: <eclipse@hydra.carleton.ca> Sent: Monday, July 31, 2000 12:26 AM Subject: RE: [SE] solar eclipse from Seattle

Sunday, 5:30 pm Pacific Daylight Time Seattle, Washington, USA

My wife and I came to Seattle to view tonight's eclipse, which begins at 7:33 pm local time here with a maximum of 30 % coverage at 8:10 pm. The weather has been beautiful and completely clear last night and today, so we are hopeful. Jay Pasachoff

From: Jay Pasachoff <jmp@williams.edu>

To the solar eclipse mailing list My wife, Naomi, and I observed this evening's partial solar eclipse very successfully in perfectly clear skies from Houghton Park, Bellevue, Washington, near Seattle. The sky was so clear that we needed solar filters to see the sun all the way down to the horizon, where we saw it setting past pine trees. It was fun to see the first little bite at upper right of the sun at 7:34, within a minute of the predicted time. This was my 30th solar eclipse (including 21 totals) and my wife's 14th (including 8 totals). Jay Pasachoff

25 December 2000 Xmas Eclipse

Christmas eclipse

From: Lori Southall <lsouthll@lunaweb.net> To: <eclipse@hydra.carleton.ca> Sent: Tuesday, July 11, 2000 2:12 PM Subject: [eclipse] Christmas Eclipse 2000

Get ready for the Christmas eclipse of 2000 with our safe solar eclipse viewing glasses. Please contact us for more information about getting eclipse glasses for your astronomy club or organization. Stock design or customized versions are available. Thanks & Regards, Lori Southall

21 June 2001 Total Eclipse

2001 sites

From: Peter Tiedt <Peter.Tiedt@npc-eagle.co.za> To: <SOLARECLIPSES@AULA.COM> Sent: Wednesday, July 12, 2000 9:10 AM Subject: RE: [SE] Hooked on the Shadow / 2001 sites

>I'm currently dealing with a Tour Operator (Safari Austral - Southern Safari, did anybody know them ?) which propose to watch the eclipse in the Muvaradona park, near the Zambezi escarpment (31° E, 16° 23' S, 3m 16.2s according to www.bdl.fr). They also propose a place in Mana Pools As I'm not an experienced chaser (only one clouded out eclipse in 1999), I would like to know if you heard about these locations. Will anybody go there, or do you all prefer Zambia ?

I will be here - that location is the intercept of the centreline with the Zambezi. Technically will be in Zambia. This location gets 3m29s. Location Co-ordinates: 15:37.57 S, 29:45.0 E, Elevation 350 m

Most of the operators in Zambabwe and Zambia will be reputable as they also want the second bite of the cherry in 2002!!!

From: <Kidinvs@aol.com>

I only have 18 seats left for the trip to Zimbabwe for 6/21/01. Check out www.eclipsesafaris.com Eric Brown

From: Assoc Prof J R Huddle <huddle@nadn.navy.mil>

I just got back from Zim & Zam. Wonderful trip. Just a few comments before I leave for Maui for the lunar eclipse: Mana Pools is fine. The weather should improve as the current La Nina conditions change to El Nino, which brings hotter and drier conditions. (This may also help concentrate wildlife near the River, too.) I think the weather will be better in Mana Pools than near Mavuradonha, but I'm no expert in these matters. There are still rooms to be had in and around Lusaka. Innovations in Travel (e-mail: innovationsintravel@msn.com) has booked the Laughing Waters Hotel in a western suburb of Lusaka. Duration at Laughing Waters is about 3:14, since it is in Lusaka. Not a five-star hotel, but unique and charming, and spotlessly clean. Mrs. Mungomba (pronounced "Moo-ohm-ba"), the proprietress, is a wonderful, charming lady, a retired attorney, who lived in the US when her husband was with the World Bank and again when he was with the UN. Innovations has decided to run a trip to Laughing Waters in addition to the trip to Mana Pools. Actually, not Mana Pools proper, but a hunting camp in the Chewore Safari Area. Duration at the camp is 2:59, but we staked out a place on the bank of the Mukanga River, and hour's drive (by 4x4; you don't want to drive anything else in this area) from camp, where the duration will be 3:16. While we were at this spot, we saw a buffalo and a herd of impalas. More info can be had by sending e-mail to innovationsintravel@msn.com or to me off-list at huddle@usna.edu. Here's to a beautiful lunar eclipse; hope we get to se Comet S4 Linear and an Iridium flash. Best, Jim Huddle

Accommodation for visitors

From: P.C. Kalebwe <PKalebwe@natsci.unza.zm To: <solareclipses@aula.com> Sent: Thursday, July 20, 2000 10:54 AM Subject: [SE] ACCOMMODATION FOR VISITORS

To the eclipse chasers, I wish to counteract the information which many people have come to harbour that all the accommodation in Lusaka is fully booked. As Chairman of the Eclipse Coordination Committe, I have made a good survey and found that a good number of lodges and guest houses are still vacant and willing to take in bookings. Infact, we will soon call a meeting to meet all the owners of hotels,motels,lodges nad guest houses. We are then going to draw up a list of all the vacant lots and post it on mailing list. Regards Peter in Lusaka

Airfares to Zimbabwe

From: <Kidinvs@aol.com> To: <SOLARECLIPSES@aula.com> Sent: Wednesday, July 19, 2000 1:36 PM Subject: [SE] Airfares to Zimbabwe...

Just for your info, I have secured group rates for travel originating in most US cities, and connecting through London for Harare, and Victoria Falls. You may also originate in London, or Frankfurt. The US fares allow for a stopover in London on the outbound or return. As an example, travel from NY-London-Harare-VicFalls-Harare-London-NY is $1310.00 plus tax. For travel originating in London, ...London-Harare-VicFalls-Harare-London is only $800.00 plus tax US departures are on Virgin, Cont, Delta, or American. The rest is on AirZimbabwe in Boeing 767 aircraft. Email me directly with further questions. You do not need to be participating on my land tour to take advantage of these airfares. Eric Brown

Charter flight to Lusaka

From: Martin Hoerenz <mh482134@rcs.urz.tu-dresden.de> To: <SOLARECLIPSES@AULA.COM> Sent: Friday, July 14, 2000 3:58 PM Subject: [SE] TSE 2001 in Africa

Hi, this week, I got the follwing e-mail. Sunny greetings Martin

Dear eclipse fans, We are planing a charter flight to Lusaka for about ATS 10.000,- (ca. 750$) for Total Solar Eclipse of 21st June 2001. If you are interested in our project, you can pre-reserve a seat. The reason is getting to know, how many people are interested in the charter flight because the flight should be for amateur astronomomers only.

For detailed information and pre-reservings, please have a look at our homepage: www.astronomie.at/asc/sofi01.htm Yours sincerely, Thomas Conrad

Contact Peter Kalebwe

From: <podmore@compcentre.uz.ac.zw> Cc: <solareclipses@aula.com>; <envphys@zamnet.zm> Sent: Saturday, July 22, 2000 Subject: [SE] Peter Kalebwe contact details/IAU/me/weather

Hello Christophe, and others wanting to contact Peter.....

His contact fax/addrress/work phone/email are on the email I copy below.

But som etime ago he gave me an alternative as envphys@zamnet.zm with "FOR PETER KALEBWE ..... " in the subject line.

He doesn't always respon dpromptly to me either, but (a) email and telephone systems are not always working in Africa (be warned!!) and (b) he's probably VERY busy with eclipse business on top of his normal work. So you have to be patient.

Peter... there are folks wanting to hear from you... (including me !!)

(2) And from NOW until Aug 18 I will be in UK (and attending the IAU assembly, with a presentation about 'our' 2001 eclipse and astronomy in Zim, so PLEASE COPY any emails also to me at

fpodmore@yahoo.com from now until mid August. PATRICK - can yo add that address for me to SEML??

(3) For UK friends - my contact phone will be 0151 339 2282 from Wed 26 Aug to 17 Aug. ok??

(4) BEAUTIFUL CLOUDLESS BLUE SKIES (= normal Zim winter weather) HAVE returned - hooray. Cold at nights though. Kind regards, Francis

23 November 2003 Total Eclipse

Expedition to Antarctica

From: <BBal81@aol.com> To: <SOLARECLIPSES@aula.com> Sent: Friday, July 28, 2000 11:17 AMSubject: [SE] Expedition in Antarctica (?)

I suppose my request is not going to be very different from yours : I am looking for people who want to be in Antarctica on November 23/24 2003, and who will do everything to materialize this project. I am 17, fond of astronomy, eclipse addicted, ambitious, but I need some help, some advise so that I might try to make my dream true. I know I am not able to "work" on an eventual expedition alone, that's why I hope you are ready to help me. Please, answer me. Edulia Balzano, France